

Unique 16gr

WARNING: Since we have no control over equipment or data which may be used with this program, no responsibility is implied or assumed for results obtained through its use. Input data and results may be incorrect or wrong. Therefore the use of this data for loading ammunition can cause serious injury to personnel and material. The computer-results had to be checked against data available in current loading manuals.
LOT-TO-LOT VARIATIONS OF POWDERS, PRIMER SUBSTITUTION AND COMPONENT CHANGE OFTEN RAISE PRESSURES TO UNSAFE LEVELS. THE USER MUST ASSUME THE ENTIRE RISK OF USING THIS DATA FOR LOADING PURPOSES.

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User Data:	Date:20-mai-2023	Time:22:52:44	File: 5744 20gr.dat
Cartridge / Caliber	.577 Sld. Snider	Bullet	.58, 505, LYM LFN MINIE 575
Maximum Average Pressure, allowed	21756 psi.	1500 bar (Piezo CIP)	with flatbase
Groove Caliber	0,574 in.	14,58 mm	Bullet Weight 505,0 gr. 32,72 gm
Case Capacity, overflow	114,0 gr. H2O	7,402 cm ³	Bullet Length 1,080 in. 27,43 mm
Case Length	2,000 in.	50,8 mm	Bullet Seating Depth 0,610 in. 15,49 mm
Cartridge O.A. Length	2,470 in.	62,74 mm	Barrel/Tube Length 30,0 in. 762,0 mm
Shot Start / Init Pressure	1160 psi.	80,0 bar	Cross Section Area of Bore 0,25933 in. ² 1,6731 cm ²
Propellant type	Alliant UNIQUE		
Charge Weight	16,0 gr.	1,037 gm	Load Density 54,6 gr./in. ³ 0,216 gm/cm ³
Heat of Explosion, Potential	294,8 J/gr.	4550 J/gm	Energy Density of Charge 16076 J/in. ³ 0981 J/cm ³
Propellant Solid Density	412,21 gr./in. ³	1,63 gm/cm ³	Used Ratio of Specific Heats cp/cv 1,222
Burning Rate Factor Ba	2,35 1/s		Weighting Factor 0,7
Burning Function Limit Z1	0,186		Prog.-/ Degressivity Factor a0 6,0
Factor b	1,612		Bulk Density 150,0 gr./in. ³ 0,593 gm/cm ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0,61 in.	15,49 mm	Capacity Displaced by Seated Bullet	0,1581 in. ³	2,591 cm ³
Useable Case Capacity	0,2936 in. ³	4,811 cm ³	Bullet Travel at Muzzle Exit	28,61 in.	726,69 mm
Loading Ratio("Density") / Filling	36,3 %		Charge Fraction Burnt at Shot Start	3,19 %	

Predicted Data:

Maximum Chamber Pressure	13097 psi.	903 bar	Bullet Travel at Pmax	0,72 in.	18,4 mm
at Muzzle Exit:					
Bullet Velocity	1202 fps.	366,5 m/s	Pressure at Muzzle	619 psi.	43 bar
Bullet Energy	1621 ft.lbs.	2198 Joule	Bullet Barrel Time	2,832 ms	
Propellant Burnt	100,0 %		Ballistic Efficiency	46,6 %	

Check Loading Manuals for Safe Minimum Charge Weight to Avoid Hazardous Ignition Conditions like Secondary Explosion Effects !
 Real maximum (peak) of pressure is reached while bullet moves within barrel.
 End of combustion reached before bullet's base passes muzzle.

